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Gloria Vollmers

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Gloria L. Vollmers
UNIVERSITY OF MAINE

ACCOUNTING AND CONTROL IN THE PERSEPOLIS FORTIFICATION TABLETS

Abstract: The bookkeeping records collected and retained by accountants of the Persian Empire centered at Persepolis from 509-494 B.C. are examined in this paper. A powerful bureaucracy exercised control over foodstuffs to supply an immense number of royal and state personnel and workers with their ration needs. A sophisticated accounting system facilitated this control, making visible not only the quantities of food assets distributed but also the locations and individuals responsible for these distributions.

INTRODUCTION

One of the great pleasures of exploring documents of the ancient world for the accounting historian is discovering how very important accounting/bookkeeping has always been. While it may be extreme to assert, as have some, that the necessity of counting and recording led to writing, it is fair to say that accounting (bookkeeping) preceded writing [Schmandt-Besserat, 1992; Mattessich, 1994, 1998]. For millennia, people and institutions have tracked their possessions for the purpose of protecting, maintaining, and expanding them if possible. Those with many possessions had to work harder to track them when forced to transfer maintenance of the property to others. This paper introduces the bookkeeping of the administration of the ancient Achaemenid Persian Empire which flourished between 550 and 330 B.C. through the archive of the Persepolis Fortification Tablets. The archive is large, and unlike others of substantial size, is completely translated [Hilprecht and Clay, 1898; Clay, 1906]. This allows scholars not conversant with ancient languages to study the tablets from their own perspective of interest.

The fallibility of memory is well-known, and it is unlikely that this weakness is a discovery of the modern era [Loftus, 2003]. While researchers study how we recreate and distort memory, the fact of the malleability and unreliability of memory must have been known throughout history. In addition to the limitations of memory, there is the fear of deliberate fraud.

Recordkeeping removes the anxiety of memory failure by storing memories and ameliorates problems of fraud by forcing parties to agree to a transaction or an audit and to record it. Basu et al. [2009, p. 1,009] demonstrated experimentally a "link between recordkeeping and reciprocal exchange." They posited that recordkeeping aided memory, helped establish reputations, lessened risk, coordinated activities, and thereby created the space for complex and expansive transactions and systems. Large bureaucracies and businesses are only possible in the presence of recordkeeping. Equally so, recordkeeping does not exist simply because it is possible; it exists because it must. Records store memories, facilitate exchange, allow barter economies to flourish, bestow and maintain legal rights to property, monitor behavior, and may be used for planning and control.

The Achaemenid bureaucracy used a sophisticated accounting system to control the collection and distribution of food commodities to work groups, animals, temples, and royal and noble households. The research question is to explore the accounting and bookkeeping technologies of this state archive. What system was in place? For what purposes was information generated? Is there enough evidence to state that our own accounting inheritance flowed to us through this period? The contribution of the paper lies in the best answers possible to the question of how an ancient people controlled their assets and minimized threats to those assets, including memory failure and theft.

LITERATURE REVIEW

Hundreds of thousands of individual written texts and fairly extensive archives of related texts have survived from the ancient world, particularly from the Middle East and Greece, from as early as 3000 and 2000 B.C. respectively. As early as 8000 B.C., there appeared clay tokens and clay envelopes to enclose them. These tokens, which offered a method of accounting for and protecting commodities before writing, form the focus of Schmandt-Besserat's [1992] research. For example, an owner hires someone to guide his herd of goats to another location. He would take a number of tokens corresponding to the number of goats and enclose them in a clay envelope. On the envelope, he would make impressions that also corresponded to the number of goats and would inscribe it with his seal. The shepherd could not change the envelope and the number of tokens inside without breaking the envelope and losing the seal.

Regarding texts written later on clay tablets, some survive from families of note and means such as the Murashu archive from Nippur (454-404 B.C.) [Hilprecht and Clay, 1898] and the Kasr archive from Babylon (465-404 B.C.) [Garrison and Root, 2001, p. 32]. Others survive from the state or other non-private institutions such as the Temple Archives of Nippur (c. 1531-1155 B.C.) [Clay, 1906]. Nissen et al. [1993] compiled a collection of bookkeeping records from the third millennium B.C. They present tablets that tracked labor and herds over years. Van Driel and Nemet-Nejat [1994] also studied a tablet summarizing the growth of a herd of sheep and goats and the yields of their wool from Eanna dating from 559 B.C. Palaima [2003] examined the records and apparent scribal traditions in the Mycenaean period. For fascinating accounts written by archeologists for the general public, see Chadwick [1958] and Chiera [1938].

Relatively little study of ancient records has entered the accounting literature. Mattessich [1994, 1998] used Schmandt-Besserat's work to posit the genesis of the debit/credit system. Some study of Greek and Roman accounting has occurred. De Ste. Croix [1956] surveyed evidence from the sixth to the first century B.C. He found primarily accounts of receipts and expenditures in both list and prose formats but no evidence of profit calculations. Hain [1966], Rathbone [1994], and Oldroyd [1995] also contributed to the study of Roman accounting. Seals, representing signatures, were the rule in the Roman Empire as was the case in the Persian Empire. Vollmers [1996] focused on the use of personal and institutional seals on the tablets of this, the Persepolis archive, to demonstrate the management control system in place. The most prolific accounting scholar is Ezzamel [1994, 1997, 2002a, b, c, 2004, 2005], who has generated a large body of work on accounting in Egypt in both the private and public spheres. With collaborators [Ezzamel and Hoskin, 2002; Carmona and Ezzamel, 2007], he has also contributed to theoretical work on writing, counting, and accounting, drawing on the Mesopotamian and Egyptian literature. Vollmers [2003] addressed issues facing accounting scholars choosing to work in the area of ancient accounting. Both she and Carmona and Ezzamel [2007] define accounting broadly, refusing to limit it to modern notions of markets and double-entry bookkeeping.

THE PERSEPOLIS FORTIFICATION TABLETS

The Persepolis Fortification Tablets, the subject of this paper, were part of the Persian Empire's administrative system.

This archive of about 33,000 complete and damaged clay tablets, written in Elamite cuneiform, was found and excavated in 1933-1934 by an expedition of the Oriental Institute of Chicago, led by Ernst Herzfeld. Herzfeld reported that these tablets had been deposited as fill, and subsequent scholars accepted and repeated this statement; however, it is now generally accepted that these were not discarded artifacts but were found in archive rooms [Brosius, 2003, p. 265]. The tablets became available for study in 1937, and Richard Hallock published 2,087 of them in 1969 and 33 more in 1978. In his monumental work, Hallock [1969] presented the texts in transliteration and translation, organized them by category, and identified seals and seal usage on each. There is also considerable scholarly textual matter. Other tablets have since been published, e.g., by Hallock [1978], but not in large quantities. Altogether about 5,000 have been studied, but many fewer have been published.

These clay tablets and clay labels were the administrative, bookkeeping records of the Achaemenid Empire from 509-494 B.C. under Darius I (c. 549 B.C.-486 B.C.), who came to power c. 522 B.C. and ruled for 36 years. The dated tablets (over 1,700 of them) are not evenly distributed over the 16 years. Half are dated in the twenty-second and twenty-third years of Darius' reign [Hallock, 1969, p. 74]. There is no satisfactory theory to explain this and other anomalies of the tablets' distribution across time. Most of the tablets were accompanied by perishable documents, hides or parchment [Brosius, 2003, p. 280]. Indeed, many reference the no longer extant document and over 82% of them display holes at two edges formed by the string that had been sandwiched between two clay "patties" pressed together by the scribe to form the tablet. That string was attached to the sealed document which authorized the transaction. The likelihood that the authorizing document was perishable rather than another clay tablet is supported by the fact that despite the many references to them, none have been discovered. The tablets reported on the movements of food commodities and on the ration allocations of foods to people (workers, travelers, and royalty or nobility), animals, and temples (for offerings). The rations are usually grain and wine but sometimes fruit and cattle. The tablets track insignificant amounts of commodities as well as massive quantities being distributed to large work groups in the area around Persepolis and extending to but possibly overlapping with another administrative system in Susa (324 miles away). The food originated on large estates, but whether they were private, supplying storehouses as taxation or for some

other kind of consideration such as free or reasonable access to irrigation canals, or whether they were royal or state holdings operating to supply needs of workers for the state, is unknown. Aperghis [1998, p. 35] takes the position that these foodstuffs were tax payments.

THE SEALS OF THE ARCHIVE

Bookkeeping is a major element of any control system, and an important component of this administrative control system is the use of seals impressed on the tablets. The seals will not be a focus of this paper as they were in Vollmers (1996), but they demand mention. As today, seals represent a signature or authorization. Some tablets bear many seals, others none, many have one, many have two. The seals can represent individuals, an "office" with jurisdiction over an area, or a storehouse/supply station or travel stop. When a tablet is impressed with only a single seal, the seal is normally that of a person of high rank even though the tablet records a transaction that involved another person. Also common is a seal that represents an office with a substantial range of authority. This becomes clear when a single seal is used by different people. When there are two seals, then usually there is a transaction involving people of lower but similar rank. A curiosity is that the seal impressions were placed on the tablet *before* the text was inscribed. One imagines that the parties affixed their seals, waited for the text to be written, listened to it being read back to them, and, if satisfied, left. If not, the tablet must have been destroyed or erased (if still damp) and redone. Erasures can be seen. It is highly unlikely that the tablet could be changed after it had dried. There are many idiosyncrasies surrounding seal usage, and none of the statements made here on seal usage can be universally applied.

Many scholars have studied the seals and seal distribution to uncover the administrative system that existed. These include Hallock himself [1969, 1977], Aperghis [1997, 1998, 1999], Vollmers [1996], and Briant [1996]. Databases have helped in this effort, and Aperghis has used them extensively. Garrison and Root [2001] have published a massive work available online, studying the seals from an art historical perspective. Their work is broad and contains an abundance of general information about seals as well as an extensive bibliography. However, Hallock's [1977, p. 127] statement still holds:

> I have been contemplating the seal impressions on the Persepolis tablets for about thirty-five years. In that

> time I have made some discoveries about the ways they were used, but I am still confused about many things. It is one of those cases in which if you are not confused you do not appreciate the problem.

Why, for example, do some people seal the tablet in many places and others in only one? When there are multiple seals, are there multiple people involved or do some people use more than one seal or have a seal with more than one impression (they do exist) [Garrison and Root, 2001, pp. 11-13]? Many of what Hallock [1977] calls *deposit* texts (the categories he chose will appear italicized in this paper), stating that a commodity has been deposited to an account, which are single sentence texts, have four seals. It is difficult to imagine why four people would be involved. Why does one supplier of travel rations never use a seal when all others do [Hallock, 1977, p. 132]?

THE BOOKKEEPING

The historian who works with more recent archives, such as those from the 19th century, can anticipate what will be found. Assuming that the family or business of interest has retained somewhat complete records, the historian will likely find most of the following: journals, ledgers, letters, and receipts. Among the receipts will likely be ones for single items as well as records from stores or other businesses detailing purchases and payments over several months or a year.

These document types are similar to those found in the Persepolis archive and are distributed in similar proportions to that of more modern archives; that is, many receipts (or texts similar to receipts), some ledger accounts (no actual ledgers since there are no books), and letters (between the two but tending to be few in number rather than many). There are no journals as accountants understand the term, a chronological record of transactions. If they were needed, they existed in a perishable form or individual tablets may have been collected together and stored in a chronological way. Tablets could not be kept damp for very long, so a document needing continuous updating could not exist.

There are large tablets that resemble ledger accounts because they contain only one account, that of a single commodity handled by specifically named people from a specific location. Hallock calls them *journals* or *accounts*. The distinction between the two categories as he created them is in many cases illusory. He states that all *journal* texts begin with a list of at least two

disbursements, and the *account* texts do not begin with such a list. While true, there is more variety than this distinction suggests. The *journal* tablets also remind us of vouchers. A voucher, recalling basic office records, was prepared only when all supporting, signed documentation had been received. Such appears to be the case with these summary tablets. They were prepared only when documentation was available and usually only when that documentation was properly authorized by means of sealed documents (there are exceptions, of course). Most of the large tablets share characteristics with modern ledger accounts and vouchers and are therefore hybrids of the two forms. They often contain unique tables.

*Receipt*s: The vast majority of texts are receipts, about 1,730 of them. Here the term "receipt" is used in a modern way, i.e., a written acknowledgment of a transaction. They were usually sealed by one or more people either as individuals and/or as the representative of a storehouse or other office. Hallock also used the term but in a more specialized way. He named texts *receipts* when they represented a "receiving" of a commodity. Other texts he named *deposits* when they represented a "depositing" of a commodity. Both are receipts in modern terminology. There is evidence that two texts were prepared for each transaction as today [Aperghis, 1998, p. 55]. Some examples of receipts follow. "Bar" and "Marris" are dry and liquid measurements respectively equal to ten quarts. Dates refer to regnal years of Darius:

> PF 708: 360 Bar of grain, supplied by Pirtis, in behalf of the king, horses consumed. At Bessime. In the 22nd year. Haturka was the grain handler. (single seal)
>
> PF 1213: 7½ Marris of wine, supplied by Ibaturra, Marriyadadda received, and gave it to post partum women, whose apportionments are set by Ustana. 6 bearing male children received each 1 Marris. 3 bearing female children received each 5 qa *(1/2 Marris)*. (2 seals)
>
> PF 930: 385½ Bar of grain supplied by Misparma, workers subsisting on rations at Zappi whose apportionments are set by Irsena, received as rations. Seventh month, 22nd year. 1 man 4, 14 men 3, 9 boys 2, 4 boys 1½, 11 boys 1, 5 boys ½. 1 woman 5, 19 women 4, 59 women 3, 6 women 2. 8 girls 2, 6 girls 1½, 4 girls 1, 6 girls ½. Total 153 workers. (1 seal)
>
> PF 175: 315 Bar of grain has been deposited as kem (?) to the account of Ramadawis at Baktis. In the 22nd year. (3 seals)

> PF 449: 25 Bar of grain, supplied by Bakubesa, the 21st year, was set aside for seed. (2 seals)

This small but representative sampling shows that each "receipt" contains similar information – the amount of the commodity; the supplier; the person to whom it is rationed, the amounts, and to where it was moved; the name of the apportioner, the officer who decides on the ration quantities; the date; and a seal or seals. Not all of this written information is always present (with one exception, the amount of the commodity is always there), and there are no texts that say "some grain" or "some wine." The object of control is the commodity. There are receipts for as little as 2½ quarts of grain and receipts for multiple thousands of bars of grain. Every quantity is accounted for. Additional information that the accountants may have needed may be duplicated by or expressed by one of the seals or in some other way. The storehouse or storehouse personnel associated with a tablet but not named on it may well be obvious to the Persepolis administrator who knew the seal. When the tablets were delivered to Persepolis, and almost all of them originated outside of Persepolis, they would have been carried by someone who knew the storehouse from which they came. The date would have been known because the tablet was sent to Persepolis for recording in the month/year in which it was written. If not, the date was certainly recorded.

Labels: Hallock's *label* texts support this supposition. Most of these small artifacts bore no seal, but holes in them show that they had been attached to a container and/or other documents; e.g., PF 1884 ("Grain of the place Rasinuzza, 22nd year") and PF 1905 ("This is the total of sheep dispensed in the 22nd year at Maknan, apportioned by Susika."). They sometimes identified the place and the date, data occasionally missing from the individual tablets. In addition, since the tablets were accompanied by a "sealed document" (long ago disintegrated), information not present on the tablets may have appeared on it; e.g., PF 1915, "This is a sealed document concerning wine of the place Razakanus, 23rd year, supplied by Appumanya."

Accounting Balances: These texts attest to amounts remaining in inventory. They were used to prove the receipts and disbursements of the commodity at the storehouse handling the grain of a specific grain handler. Counting inventory is a control over assets to minimize theft. Hallock [1969, p. 15] writes:

> All these texts contain the phrase *sutur daka*, 'balance carried forward.' … How to reconcile this use of *sutur* with its use in DB 63:80 (on the Behistun monument to Darius) in the meaning 'right' or 'rectitude' is something of a problem. But presumably the unifying concept is one of 'correctness.'

Hallock was right on point. These were "audited" balances. They were "correct." Not only is the balance noted, so too is the fact that the accounting or reckoning took place. No doubt the sealed documents accompanying them also did so:

> PF 240: 9502 Bar of grain has been carried forward as balance, supplied by Bakadusda, at Liduma. In the 22nd year, twelfth month, the accounting was done. (1 seal)

> PF 252: 4 Bar of kazla, 6 of irtastis, total 10 Bar of fruit, has been carried forward as balance at Mazikka, supplied by Marrezza. In the 20th year, ninth month, Ussuma reckoned it. (1 seal)

Journals and Accounts: Hallock called tablets j*ournals* that are compilations of tablets of similar types. There are 26 of these, many of which are very large. Some are lists only of ration disbursements. Others add a summary, and still others add both a summary and a table. His category *accounts* (68 tablets) is similar in the information provided, but these tablets do not contain the list of disbursements. Many of the *account* tablets are meant to accompany a *journal* tablet. Indeed, the *journal* tablet listing only disbursements is incomplete.

PF 1944 is an example of a list-only *journal.* It is abridged, omitting quantities consumed at the individual level. This document compiles the grain disbursements from a supply station near Shiraz in the twentieth year of the reign of Darius, handled by Maumamassa and Muzriya. Grain handled by others working with that supply station would have been compiled on another tablet. The likely process follows. Individual tablet receipts were prepared in duplicate as disbursements were made in accordance with a sealed document authorization. Both the supply station and the person receiving the supplies would need a receipt. Therefore, each supply station must have had a resident scribe as did those individuals whose sealed documents were sent for supplies.

Periodically, all the receipts constituting specific, authorized disbursements, "in accordance with a sealed document," from

TABLE 1
Example of a List-Only Journal: PF 1944

60 Bar the boys of Parnaka received as rations. 2nd month, 18th yr and they are receiving the sealed document in the 20th year at Hadaran.

300 Bar with a sealed document of Suddayauda, workers subsisting on rations at Shiraz, Treasury workers, whose apportionments are set by Suddayauda, received as rations. 3rd and 4th month, 20th year.

2020 Bar with a sealed document of Rasda, workers subsisting on rations, of the abbakis (woman), received as rations. For the 5th and 6th months. (Note, this represented 403 people)

1017 Bar with a sealed document of Rasda, workers subsisting on rations, of the abbakis (woman), received as rations. For the 7th month.

31.2 Bar the tidda makers received and gave it as sat to workers subsisting on rations, whose apportionments are set by Suddayauda at Shiraz. For the 8th, 10th and 12th month.

78 Bar the tidda makers received and gave it as sat to workers subsisting on rations, whose apportionments are set by Rasda at Shiraz. 5th and 7th months

16 Bar with a sealed document of Rasda, Irdaksara received and gave as kamakas to workers … post partum women. 8th, 9th, 10th, 11th, 12th months

5 Bar with a sealed document of Rasda, Irdaksara received. He gave it as kamakas to exerters (?) 6th month 20th year.

14 Bar with a sealed document of Ustana, he gave as sat to 5 young horses. Each consumed 1 qa daily. For 2 months, the third and fourth, 20th year.

42 Bar with a …, 1 horse consumed 3 qa daily, 2 horses each consumed 2 qa daily. For 2 months, the ninth and eleventh, 20th year.

42 Bar with a …, 1 young horse consumed 3 qa daily, 2 young horses each consumed 2 qa daily. For 2 months, the eight and twelfth.

30 Bar with a …, he gave as sat to young horses. 1 horse consumed 3 qa daily. 2 horses each consumed 2 qa daily. For a period of 2 months, the fifth and seventh, 20th year.

7 Bar with a …, he gave as sat to 2 young horses. Each consumed 2 qa daily, 1 qa of this total was issued … (?). First month, 20th year.

18 Bar …, he gave as sat to 2 ber horses. Each consumed 3 qa. Sixth month, 20th year.

Total 3680.2 Bar dispensed according to this tablet, grain supplied by Maumamassa the grain handler and Muzriya the delivery man, … at Shiraz. (one seal)

Source: PF 1944 (entries abridged)

this supply station in Shiraz were gathered in a container with a *label* text attached and were sent to the accountants at Persepolis. It is possible that the scribe at the supply station, or an accountant who traveled to the supply station, may have compiled the tablets, but all documents were transported to Persepolis. There an accountant organized them by grain handler and by type of disbursement (workers, horses, temple gifts) and copied them onto a larger tablet. For efficiency and to save space, he abbreviated (PF 1223 was copied into this tablet, PF 1944, in a shortened form.). He also combined (PF 1676, from the eleventh month of the twentieth year, was combined with an identical one, no longer extant, for the ninth month to create one of the entries above: "21 Bar was supplied by Maumamassa. 1 horse daily consumed 3 qa. 2 horses daily consumed 2 qa. Eleventh month, 20th year."). The tablets for the eighth and twelfth months were also combined. The horses were given rations in all months but the second and the tenth. Since the horses must have been fed, either another tablet referring to those months existed or they received rations from another source. Another possibility is that this tablet is a record of some kind or reimbursement or other credit to the supply station for properly authorized disbursements only, and that the authorizations for those two months were missing. This is one of many mysteries surrounding the system in place.

Hadaran, a village mentioned on the tablet, was close enough to Shiraz for Maumamassa and Muzriya to handle its rationing needs. Another tablet, PF 1994, names them in the same year in conjunction with yet another local village, Hidali. One may conclude that these men were working for a producing estate and were handling its grain distributions to the local supply stations in Shiraz, Hidali, and Hadaran. The focus on specific people is responsibility accounting. Grain supplies were protected by monitoring those responsible for its transportation and delivery.

The first entry names Parnaka, uncle of Darius, who was likely the second highest ranked person in the empire. It refers to a transaction that occurred in the eighteenth year but was not recorded until the twentieth year because the "sealed document" was not received until then. This suggests a control system of some weight was in place. The grain was likely owned by the state, by the king, or some other high ranking personage demanding a close accounting regardless of the rank of the receiver.

This tablet is reminiscent of posting to a ledger. Just as

businesses create as many accounts as needed for informational or control purposes, the state needed to track commodities by supply station and by those responsible. It is unlikely that it was used for planning purposes since the tablet was prepared after the fact, but it may have contributed information for reward and promotion. Aperghis [1999, pp. 181-182] demonstrated promotional movement through seal analysis.

TABLE 2

Another Journal Example: PF 1951

72 Bar Mitukka the Magus received for the libation of the *lan* ceremony for 12 months.

245 Bar, sealed document of Tetukka, workers at Kariran received for 7 months, the 3rd to 9th.

318 Bar, …, workers at Kurtimas received for 6 months, 3rd to 8th.

180 Bar, …, workers at Kurtimas, received for 3 months, 9th to 11th.

150 Bar, sealed document of Harmasa, workers at Tukkamassatas….

100 Bar Narak…..received.

[summary]

161.6 Bar on hand as per account

1,000 Bar for provisions in the 21st year, grand total:

1,161.6 Bar on hand

1,065 Bar dispensed *[this equals the total disbursements above]*

Total 96.9 Bar carried forward as balance, this being the total of grain at Kariran, supplied by Tarkasuma and Bakapikna his delivery man. This account was made in the 21st year. The grain was apportioned by Hamarsa. [two seals]

Source: PF 1951 (individual entries are abridged)

Even more like a ledger account is PF 1951, a *journal* text that begins with a series of grain disbursement entries followed by a summary. The major difference between this tablet and the previous one, besides size, is the summary portion with its two statements of a beginning and an ending balance and a statement of the grain that was provided. Though absent the familiar format, the summary is recognizable; it is a ledger account with separate disbursement details. The controls are on the disbursements and are proven by inventory balances per account. The

reason there are no details of the provisions is that they come from only one estate as evidenced by the many tablets called *Providing of Provisions*; e.g., PF 551, "1260 Bar of grain was provided for provisions. At Hisema. It was supplied by Ammamarda. 19th year. Sati-Simut will be apportioning it." A particular storehouse, such as that at Kariran (PF 1951), may have had only one supplying estate which then did not need to be named. At the time the grain was delivered to the supply station, a receipt was prepared in duplicate, for the supplying estate's agent and for the station itself. If, in the quoted case, Ammamarda was an agent of an estate, he would want evidence that the grain entrusted to him was delivered as promised.

TABLE 3

Example of Tabulated Journal Format: PF 1955

Disbursement list [not reproduced: entries sum to 540 15/30, but total is given as 538 15/30]

[Summary]

115 carried forward in the account of the 19th year

350 provided for provisions in the 20th year

206 [3 entries from 3 named places]

Total 671 on hand, in it:

535 15/30 dispensed

109 carried forward as balance

19 1/30 issued to the man doing the delivering

7 14/30 withdrawn

Grain at Mezama, supplied by Karkis and Ukpis and Parnadadda.

This whole account of the 20th year was reckoned in the fifth month.

The female workers did not receive rations.

i	ii	iii	iv	
Set Aside	provided		withdrawn	barley at the ? at Mezama
120	230	970	barley 10 units	
5	120	30	grain 30 units	
125	350	1000	This is the total of the 20th year	

It was set aside for cattle in the possession of Karkassa and Durakka they say.

Source: PF 1955 (abridged)

Not all *journal* tablets are alike. In the summary section of PF 1952, there are some limited details of grain receipts but no entries called "provided for provisions." All the grain received by this supply station was transferred from other supply stations where the official provisions had originally been recorded. The disbursements were listed first as in PF 1951.

Another *journal* format is differentiated by the presence of a short table at the end. In the example illustrated, PF 1955, the tablet begins with a disbursement list, not presented here, and a calculated total of 538 15/30 that neither equals the actual total of 540 15/30 nor matches the amount dispensed according to the summary section (535 15/30). It is startling that a tiny amount of a commodity dispensed or deposited warrants its own tablet; yet, the accountants do not appear to prize mathematical accuracy in the summary tablets. A possible conjecture is that the accountant receives the supporting documents (audited beginning and ending balances, individual receipts and disbursements etc.) and they do not add correctly. In the absence of an accepted way to recognize and fix an error (e.g., shrinkage, cash over/short), he has to make an adjustment in the compilation to force the balances to match. He chooses to alter the total of disbursements. Even if this is true, there remain plenty of examples of pure arithmetical errors in this archive, errors that bookkeepers using paper frequently made.

The statement in PF 1955 that female workers did not receive rations begs for an explanation since they must have eaten. This is a similar question to that involving the horses earlier. Did they receive rations from another source? Are these records of reimbursements to supply stations rather than actual records of disbursements to workers? That is, is this statement saying that the storehouse has not been reimbursed or will not be reimbursed for the rations of the female workers? Even if these translations were word perfect, full comprehension is illusive. There are unspoken practices and understandings behind the words and the transactions that escape us. Other tablets of the same type have similar statements, e.g., "at that time the workers received rations" (PF 565). One wonders why that had to be said since the ration allocations had just been spelled out a few lines previously.

The small table at the conclusion of the tablet is curious but not unique to this tablet; there are many others with the same form of table. There are two numbers there that link to the information given in the text, the amount provided for provisions (350) and the amount set aside for seed for cattle (the 125 is in

the disbursement list not presented above). The amounts in column iii cannot be mapped to the text. Aperghis [1997, pp. 278-279] believes that the amounts "withdrawn" never entered the storehouse in question but were immediately transferred where needed. There must be a reason, though, why these withdrawals are mentioned on the tablet. Could it have been for tracking purposes? For example, it could be interpreted as, "This grain, handed by Karkis et al., passed by here." This station handled the set asides for seed and the full amount of grain needed to be stated to account for the amount of seed set aside. However, since the full amount was not needed at that station for any other reason, it was transported elsewhere.

The amounts in column iv do conform to what is found on other texts; e.g., 1/10th of the total of barley (970+230/10 = 120) and 1/30th of the total of grain (120+30/30 = 5) after summing columns ii and iii is set aside for seed. These proportions are seen consistently on other tablets. Our understanding of what was recorded or needed by the intended reader is limited. Why do only certain numbers appear? Someone wanted to see those particular numbers isolated and emphasized. We may never know why.

The accountant(s) who created these large tablets had at hand individual receipts for disbursements, amounts set aside for seed, amounts provided for provisions, amounts transferred, as well as the beginning and ending balance tablets. From these, he (or they) could compose the comprehensive tablet that would allow some reader a relatively easy way to evaluate the demands on a commodity in one area under the control of specific handlers. This practice is similar to that of posting to a ledger, but the presence of authorized receipts reminds us of voucher accounting.

Accounting balance, journal, and *account* texts, prepared by accountants, bear usually one seal, that of the accountant or perhaps the office of the accountant. One visualizes the accountant organizing these large tablets on shelving awaiting the call for them. The smaller tablets were stored in a container with a label appended to be used as backup documentation.

The existence of tablets on which summaries appear tells us that PF 1944 shown above, which is comprised of disbursements only, was incomplete. There must have been at least one other tablet associated with it that has not survived. Indeed, several existing tablets specifically say that they are one of a series of tablets. Thus, many of the *account* tablets, none of which have a list of disbursements, were associated with a *journal* tablet too

large to contain the additional information needed.

The importance of following proper procedures is evident from several tablets which state that a proper accounting was *not* done. Some state that the accountants were not given the "sealed document," and that the accountant had to record what the person said since that document was not available. That these statements were made attests to the high regard placed on proper recordkeeping. In addition, the single seal that most *journal* and *accounting* tablets bear suggests that the bearer or the office had a high rank. Two of the *accounting balance* tablets are sealed with Parnaka's own seal. It is difficult to imagine that he counted the inventory himself. It suggests that the accountant was held in such high esteem that Parnaka allowed him to use his seal as confirmation of an inventory count. Parnaka may have lent the accountant the seal to grant access to the inventory itself.

CONCLUSIONS

People adapt their bookkeeping technology to fit their needs. This administration needed to supply large numbers of workers and animals with foodstuffs. The hubs of this system were the many supply stations (or storehouses) where commodities were delivered and distributed. To ensure this was done efficiently, there was a need to track commodity rations and to hold people responsible for them. Organizing these tablets by person and supply station is an example of responsibility accounting and suggests a method for assessing the work of the grain handlers. They had learned that taking inventory was a necessary aspect of control. Despite the control of the authorizing "sealed document," records of receipts and disbursements were suspect without the assurance of beginning and ending inventory figures. Hence the concern expressed when those figures were not available.

There are several tablets showing accountants traveling. Others mention the accountant who did the accounting. This indicates that the state incorporated into its recordkeeping system the need for an independent person, besides the resident scribe/accountant at the supply stations, to check inventory or perform other auditing type duties. The fact that the accounting is not done at regular intervals was a consequence of the travel times of these state accountants.

The building block of the recordkeeping system was the clay tablet receipt. Though small, they were awkward when

numerous. Hence the development of the compiled tablet that abbreviated and summarized the information needed. Once summarized, the smaller tablets were collected and stored as backup information. The larger tablets, one assumes, were organized in the archive by supply station and by commodity on shelves or on the floor. An administrator could check on the activity at any one station and evaluate performances. The suppliers and delivery men might be up for a promotion if they are handling enormous quantities of commodities without complaint. The provisions provided by various estates might also be checked to be sure they were producing the quantities that the administration wanted.

Although it is impossible to say that modern bookkeeping or accounting is directly linked to this system, it does appear that the recordkeeping need or impulse creates very familiar technologies, such as receipts, authorizations, summaries, and independent "audits." Controlling this massive rationing distribution system would not have been possible without good accounting. The Persian bureaucracy did indeed use accounting to hold people to account.

While those of us who work with historical archives consistently run the risk of carrying our understanding of the present into the past, of unavoidably holding on to our biases, we cannot avoid this without choosing not to share our findings with others. We take the data as they exist and interpret them as honestly as possible, leaving open the door to new interpretation in the light of new information.

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